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Balkans Region

The Balkans have been the scene of political turmoil since the dissolution of the former Yugoslavia in the early 1990s. Even so, the Balkans are becoming an important transit center for energy supplies from the Black Sea area and beyond to Europe.

Note: All information contained in this report is the best available as of July 2001 and can change.

GENERAL BACKGROUND

The Balkans at its broadest conception can be considered to comprise the entire landmass south of Ukraine, Slovakia, and Austria, and east of Italy. However, for the purposes of this report, the countries that once encompassed the former Yugoslavia (Bosnia and Herzegovina, Croatia, The Former Yugoslav Republic of Macedonia (F.Y.R.O.M.), Slovenia, and the current Federal Republic of Yugoslavia (Serbia and Montenegro)), as well as Albania, will be the focus. Coverage will include energy projects and relationships of larger regional significance. Note that Bosnia and Herzegovina consists of two autonomous entities: the Federation of Bosnia and Herzegovina (FBiH) and the Republika Srpska (RS). The Former Yugoslav Republic of Macedonia will be referred to as simply "Macedonia." Serbia, one of the two constituent republics of Yugoslavia, consists of Serbia proper, as well as two autonomous provinces: Vojvodina and Kosovo.

Prior to its dissolution, the former Yugoslavia had an energy infrastructure and general level of economic development comparable to that of other eastern block states such as the former Czechoslovakia and Hungary, but there was considerable diversity within the former Yugoslavia, with Slovenia being the most advanced and the Kosovo province of the Serbian Republic being the least developed. With the exception of Slovenia, the warfare and political instability that has occurred since 1991 has damaged the economic, and specifically, the energy infrastructures of all the constituent republics of the former Yugoslavia. Albania, prior to the demise of its isolationist communist regime in 1991, was far less developed economically than any part of the former Yugoslavia, and was the poorest country in Europe. Since that time, the Albanian economy has progressed, but it is still among the least developed in Europe. However, with the exception of Macedonia, the region appears poised for a more peaceful and prosperous decade than the 1990s. Slovenia is likely to be one of the countries to join the European Union (EU) when it expands, having completed many of the requirements of the *acquis communitaire*.

At the beginning of 2001, ethnic Albanian guerillas in Macedonia started a rebellion in Tetovo, the country's second-largest city, that has now caused months of fighting and has partially disrupted the country's economy. Negotiations between the government and ethnic-Albanian parties began after a partially effective cease-fire was put into effect in

mid-June, but those negotiations broke down. Special envoys from the United States and EU conducted an urgent assessment of the deteriorating situation in the country on July 25, 2001, one day after riots in the capital and intense fighting between government forces and ethnic Albanian rebels renewed fears of civil war. Later that night, the Macedonian government announced that it had reached a new, NATO-brokered cease-fire with ethnic Albanian rebel forces, which had reached the outskirts of Tetevo. NATO plans to send peacekeepers if a permanent accord can be reached.

Following the end of former Yugoslav President Slobodan Milosevic's government in October 2000 and the initiation of democratic changes in Yugoslavia, all oil sanctions against Yugoslavia were lifted. In June 2001, the Serbian government handed Milosevic over to the United Nations War Crimes Tribunal in The Hague, where is currently imprisoned. Following this move, a conference of western nations pledged to donate $1.3 billion for the rebuilding of Yugoslavia, including at least $100 million from the United States. Montenegro was much less heavily damaged in the Kosovo crisis than was Serbia.

The total population of the former Yugoslavia and Albania is approximately 26.2 million, slightly less than the population of Bulgaria and Romania combined. Total GDP in 1999 (purchasing power parity) was $85.3 billion. Growth rates in 2001 are expected to be above 3% for all of the countries, although it is worth noting that there is significant uncertainty regarding Macedonia because of the political situation, and that Yugoslavia and to a lesser extent Bosnia, are still recovering from massive economic loss due to warfare during the 1990s.

In June 2001, seven Balkan countries - Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Macedonia, Romania, and Yugoslavia - signed an agreement to create a free trade zone for certain goods to come into effect by the end of 2002.

OIL

The countries of the former Yugoslavia and Albania are very small consumers of oil, and even smaller producers, on a world scale, accounting for less than 0.01% of total world production and consumption. The region imported about 218,000 barrels per day (bbl/d) in 1999, mostly overland from Russia and from tankers at Adriatic ports. Total proven oil reserves for the area are 335 million barrels, all in Croatia, Yugoslavia, and Albania. Nevertheless, the region is likely to become relatively more important as a transit center (Figure 1).

International Projects

Currently, there is little cooperation between Balkan countries in oil production development. Some large international oil companies from outside the region have begun to invest in a few projects, but as the production potential of the area is limited, so is international investment. Most international interest is in Albania, which has the second-largest oil reserves in the Balkans, after Romania. Lundin AB of Sweden, Occidental, Forest Oil, OMV of Austria, Hellenic Petroleum (HP) of Greece, and INA of Croatia have all purchased shares of blocks in Albania. Exploration is active, but none are producing yet. U.K.-based Premier Oil is developing part of the Patos-Marinza field, which is already in production by Albanian state oil company Albpetrol. Premier expects initial peak production of 15,000 bbl/d.

Pipelines and Transit

The most important oil pipeline project in development in the Balkans is the AMBO pipeline. The Albanian Macedonian Bulgarian Oil Corporation (AMBO, U.S.-based) will construct a 567-mile, $1.13-billion crude oil pipeline from the Bulgarian port of Burgas to the Albanian port of Valona (Vlore) through Macedonia. The estimated capacity will be 750,000 bbl/d. The pipeline would reduce tanker traffic through the Bosphorus Straits and the Aegean Sea as Black Sea (and indirectly Caspian) oil could be shipped from the Adriatic. AMBO began to assemble financing for the project in June 2001, after letters of acceptance from the three governments and a positive feasibility study. Once the financing is in place, construction is expected to take three years. Also in Macedonia, the construction of the Skopje-Thassaloniki (Greece) oil pipeline was formally launched in November 1999. This 143-mile, $107-million pipeline has

the capacity to carry about 50,200 bbl/d. It is being built by a subsidiary of HP, El Pet Balkiniki. This pipeline will be able to provide a supply nearly triple Macedonia's current requirement. Meanwhile, Greece and Bulgaria have a pipeline planned from Burgas on the Black Sea to Alexandroupolis on the Aegean that would be another alternative to the Bosphorus. Russian backing to supply the oil is crucial to the project going forward.

Another key project is the reversal of the 400,000 bbl/d-capacity Croatian Adriatic Oil (Adria) Pipeline run, by Jadranski Naftovod (JANAF) of Croatia. Currently, oil that arrives by tanker at the Croatian Adriatic port of Omisalj is taken by the pipeline into the interior of Croatia, where it bifurcates at Sisak, with one branch going to Hungary and the other branch going to Yugoslavia (Vojvodina), touching the border with Bosnia at the refinery at Srpski (Bosanski) Brod, before heading on to a connection with a pipeline to Novi Sad (Figure 2). The reversal of the pipeline, accompanied by integration of the Adria and Druzba pipelines (Druzba runs from Russia to Hungary), will mean that Russian oil could be exported by tankers from the Adriatic. Russian oil major YUKOS has signed a $20-million contract with JANAF to finance the upgrading of the Adria pipeline in order to integrate it with the Druzhba pipeline. YUKOS is setting up the company YUKOS-Adria to implement the project, which will allow the export of up to 5 million tons per year (100,000 bbl/d) of Russian crude oil via Belarus, Ukraine, Slovakia, Hungary, and the deep-water port at Omisalj. YUKOS has guaranteed the supply of 2.5 million tons (50,000 bbl/d) for the pipeline, which will give Russian exporters a direct route to world markets via the Adriatic Sea, instead of through the Bosphorus. This pipeline is already used internationally - in March 2001, there was an agreement between JANAF and Serbian Oil Industry (NIS) to transport 13.9 million barrels of oil from Omisalj to refineries in Novi Sad and Pancevo during 2001.

NATURAL GAS

Total natural gas reserves in the former Yugoslavia and Albania are 3,037 billion cubic feet (Bcf), with most of that in Yugoslavia and Croatia, and a small amount in Albania. This is less than 0.01% of total world reserves. This is far smaller than neighboring Romania (13,200 Bcf). Production is likewise small; only Albania, the smallest consumer by far, is self sufficient. Total imports were 206.6 Bcf in 1999. Imports are expected to rise, and new pipelines are being planned and constructed to deliver these imports.

International Projects

Croatia is attempting to increase its domestic production by developing five gasfields in the northern Adriatic, through the Inagip joint venture with ENI of Italy (INA of Croatia and ENI subsidiary Agip). The $187-million Ivana platform's construction is nearly complete. It is expected to have production of 67 million cubic feet per day (Mmcf/d). The field is estimated to contain 279 Bcf, though gas can only be piped to Italy, then back to Croatia through Slovenia's pipeline network. Under the agreement, Croatia will receive half of all gas produced. Inagip announced that in its exploration of the central Adriatic seabed it had discovered a new gasfield (Marica) in the Aiza Laura block with unproven reserves of 106 Bcf. Gas production at the remaining four northern Adriatic gasfields (IKA, IDA, Irina, Anna Maria) is expected to commence in the near future. These projects open the possibility of building a gas pipeline to the Croatian coast, according to Croatian Prime Minister Ivica Racan.

Pipelines and Transit

There are several new natural gas pipeline projects in progress in the region, in an effort to import more natural gas that originates in Russia, the world's largest natural gas exporter. Bulgaria has been at the forefront of these efforts, investing $44 million in 2001 to expand its natural gas pipeline network in order to pump more Russian gas to its Balkan neighbors, particularly Turkey, Greece, and Macedonia. Under an agreement between Bulgaria (Bulgargas) and Gazprom of Russia, transit volumes to Turkey, Greece, and Macedonia should increase to 494 Bcf after 2002 and to some 671 Bcf by 2010. About 90% of the gas goes to Turkey. Current transit volume to these three countries from Bulgaria is 424 Bcf annually.

Hungary is another country that is becoming increasingly important as a transit center for natural gas. Serbia and Bosnia

(through Serbia) import all their natural gas through Hungary's Bratsvo (Brotherhood) pipeline that carries Russian natural gas to Central Europe, and enters Serbia from Horgos, Hungary (near Szeged). Recent agreements between Gazprom and NIS of Yugoslavia that resolve a debt dispute and increase imports from 9 Bcf in 2000 to 53 Bcf in 2001 will assure Hungary's importance as a transit center in the Balkans. Energoinvest imports the Russian gas into Bosnia and Herzegovina from the pipeline connection at the border town of Zvornik. It has an exclusive contract with Gazprom (the details of which are not released), to avoid problems with the often disputing state-owned natural gas companies of Bosnia and Herzegovina's two administrative entities. The pipeline from Belgrade bifurcates at Zvornik, and serves various parts of the two entities, though there are still areas of Bosnia and Herzegovina reliant on truck-delivered canisters. BH gas handles the actual transport arrangements for Energoinvest. MRKS-Holding of Switzerland is planning to build a $100-million, 283-mile pipeline from Zvornik to Novigrad (outside Sarajevo) that would service areas of the RS that currently have no gas supply. Throughput capacity would be over 35.3 Bcf per year, and the pipeline will be connected to the existing Belgrade-Sarajevo pipeline at Zvornik. It is unclear whether ITERA of Russia or Gazprom will supply the gas.

Romania is expanding its pipelines to supply more gas to its Balkan neighbors. The first 56 miles of a pipeline between Isaccea and Negru Voda in southeastern Romania was completed in December 2000. Tranzgas of Romania concluded an agreement with Gazprom in February 2001, to deliver the gas for this pipeline expansion at preferential rates. Romania aims to transit 988 Bcf annually to Turkey, Bulgaria, Greece, and Macedonia starting sometime in 2002.

Slovenia and Russia are in talks to lay a new Russian natural gas pipeline to Italy through Slovenia. The 186-mile project is estimated to cost $500 million and would have an annual capacity of 777 Bcf.

ELECTRICITY

All of the countries of the former Yugoslavia and Albania were net importers of electricity in 1999, except Slovenia, the second-largest total generator, and the largest generator on a per capita basis (Figure 3). Total net electricity imports were 3.6 billion kilowatt hours (BkWh) in 1999. Total electrical generation capacity in 1999 was 231.3 gigawatts (GW), and total amount of electricity generated was 72.2 BkWh. Generation sources in 1999 for the former Yugoslavia and Albania were 54% thermal, 39% hydro, 6% nuclear, 1% other. Croatia is very hydro-dependent (over 50% of capacity), and Albania is extremely hydro-dependent (over 80% of capacity). Slovenia has the region's only nuclear plant, though its output will soon be shared with Croatia.

Prior to its dissolution in the early 1990s, the former Yugoslavia had a single electricity grid, the Union for the Coordination of the Transmission of Electricity (UCTE) network. UCTE was connected to the Western European power grid. Only Croatia, Slovenia, and the FBiH have been reconnected to the UCTE. However, Yugoslavia (Serbia and Montenegro) is still a major importer from neighboring countries. In February 2001, Czech and Serbian industry/energy ministers signed a memorandum of cooperation in the energy sector, covering mining, power station construction, and the construction, maintenance, and reconstruction of distribution networks. In June 2001, energy ministers from Albania, Bosnia and Herzegovina, Bulgaria, Greece, Macedonia, and Romania signed a memorandum for the creation of a competitive energy market in the Balkans. The Regional Association of Energy Regulators (ERRA) was established in December 2000, in order to create a common power market in South Eastern Europe and the Former Soviet Union. The countries that co-established ERRA are Albania, Armenia, Bulgaria, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Poland, Romania, Russia and Ukraine. Albania and Macedonia are members of the Black Sea Regional Energy Center (BSREC), an organization for cooperation the energy field, comprising Albania, Armenia, Azerbaijan, Bulgaria, Georgia, Greece, Moldova, Romania, Russia, Macedonia, Turkey and Ukraine. Programs concern promotion of energy policy development, diversification of energy supply, and the development of energy interconnections.

In June 2001, the long-running dispute between Slovenia and Croatia over the 664-megawatt (MW) Krsko Nuclear

Plant, the only nuclear plant in the former Yugoslavia and Albania, was resolved. The plant is located in Slovenia, but was built jointly by Croatia and Slovenia prior to the dissolution of the former Yugoslavia. Slovenia had made the Krsko plant into a public company, and stopped supplying Croatia with power from the plant in 1998. Under the current agreement, Croatia will be co-owner of the plant (including assuming partial responsibility for the nuclear waste produced), and will begin receiving electric power from the plant again by July 2002.

Croatia is planning to build a hydroelectric plant on the Drava River, which is the border with Hungary. Croatia has agreed to cooperate with Hungary, and will not take unilateral steps to advance the project. However, the Trebisnjica hydro plant in Bosnia and Herzegovina (in the RS), and the nearby Dubrovnik hydro plant in Croatia are involved in a dispute over power sharing. Croatia agreed to send the output from one of the generators of its 2X108 MW Dubrovnik hydro plant to Albania in January 2001, as Albania has had to increase imports because of low rainfall. Albania's grid, however, is unable to support the maximum potential from the Dubrovnik unit. Macedonia offered Albania the use of its heavy oil-fired, 210-MW Negotino plant at cost in November 2000. In 2000, Macedonia also allowed more water from Lake Ohrid to drain into the Black Drin River in an attempt to increase flow to Albanian hydro stations further down the river. In anticipation of more rainfall in future years, Enelpower of Italy plans to build a 100-MW hydro plant on the river Vjosa in Albania, with power sold to any or all of Albania, Greece, and Italy (by submarine cable).

Although Albania has had to import exceptional amounts of electricity in 2000-2001 because of a drought, electricity import/export is becoming more important throughout the Balkans (see table). Albania, in addition to borrowing neighboring electric plants as mentioned above, has new agreements to import power from Slovenia and Slovakia (by using spare capacity associated with Croatia's Dubrovnik hydro plant), and continues to import from Greece. Yugoslavia has also suffered shortages, first from damage due to the 1999 Kosovo crisis and then from a drought and increased demand as the economy began to recover from the downturn of 1999. Yugoslavia imports from Bulgaria, Greece, Hungary, and the RS in Bosnia and Herzegovina. Slovenia, the only net power exporter of the former Yugoslavia in 1999, has export agreements with Croatia, although Slovenia's net exports are declining as it consumes more and more power domestically. Bulgaria is planning to expand its electricity exports in the Balkans to become a major hub. In 2000, Bulgaria exported 4.4 BkWh to Turkey, Greece, Macedonia, and Serbia, and added exports to Kosovo in 2001.

A new 400-kilovolt (kV) transmission line between the Macedonian and Bulgarian grids is under construction, and another 400-kV line to Bulgaria is planned (Dubrovo-Radomir). An internal 400-kV line from the power plants in Bitola to Skopje was constructed in 1999. A 220-kV transmission line from Vrutok to Bureli (Burrel) in Albania is also planned.

Albania

Albania, despite a lack of warfare and the lowest per capita energy consumption in Europe, has had enormous difficulties in meeting the country's energy demand. Albania's energy infrastructure uses out-of-date technology, and much of it is in a state of disrepair. Given Albania's heavy reliance on hydropower (85.8% of generating capacity in 1999), a recent severe drought has brought about an energy crisis in Albania, characterized by constant power cuts. Albania can produce only 12 GWh per day, and the power grid cannot handle importing more than the current 5 GWh per day.

Albania's oil industry, though small by international standards, is Albania's most important industry. Crude oil production was just 5,575 bbl/d in 1999, though proven reserves of 165 million barrels are the second-highest in the Balkans, after Romania. The state oil company, Albpetrol, is the dominant upstream and downstream player. Since 1993, foreign companies have been able to drill on-shore in Albania, and exploration wells recently have been spudded by a number of companies. However, currently producing fields are off-limits to foreign companies. Albanian production is characterized by numerous wells producing very small amounts of oil, though one field, Marinz-Patros in the southern part of the western plateau, accounts for nearly half of total production. Albania imports slightly less than

half of its oil consumption. Its two operational refineries, run by Albpetrol at Ballshi and Fier, have refining capacities of 17,800 bbl/d and 8,500 bbl/d, respectively. There is a 122-mile, 12-inch internal pipeline that connects some of the country's producing fields, Tirana (the capital), and Albania's refineries. Most oil imports are brought in by truck or rail, though there is a small oil pipeline from Montenegro to Shkoder, near the border, from which oil and oil products must still be put in trucks or trains.

Albania's small natural gas reserves are estimated at 100 Bcf. Production was 706 Mmcf for 1999, all of which was consumed domestically. Albania does not have an international pipeline to import natural gas, though it does have an internal natural gas grid connecting some of Albania's cities and natural gas fields. All of Albania's oil and gas pipelines are corroding and in need of repair.

Coal reserves in Albania have been estimated at 772 million tons, though this figure is uncertain. Production was 49.6 thousand short tons in 1999, almost all lignite. There are eight mines in operation, which are operated by various state-owned stock companies. All coal is consumed domestically, not just for electricity generation, but also for home and commercial heating.

Korporata Elektroenergjetika Shqiptare (KESH) is Albania's state-owned electric power monopoly (generation, transmission, distribution). The utility suffers from enormous problems, including an unbalanced capacity mix that leaves Albania vulnerable to droughts, high levels of electricity theft and non-collection of bills, flat rates that do not encourage conservation, an infrastructure unable to support needed electricity imports, and inefficient polluting power plants. KESH is implementing plans to improve billing and collection, reduce theft, make billing commensurate with usage, and import electricity throughout the year. The World Bank, IMF, and other multilateral agencies have made loans and grants to improve Albania's infrastructure contingent on such reforms being successfully implemented. KESH is also rehabilitating a 150-MW thermal plant at Fier that is offline and plans to add 99 MW to the plant. KESH is attempting to get foreign investment in new thermal (gas) and even hydro plants, though many of the problems in Albania's power sector have made investors wary. In March 2001, China agreed to build a hydro power plant on the Drini River that is expected to produce 350 MmkWh annually. KESH announced on July 26, 2001,that it was imposing daily power cuts of up to 10% on consumption to conserve its water reserves until the rainy season arrives. This comes after the IMF urged the government to take swift measures to avoid a repetition of last year's crisis, when a drought the previous summer led to black-outs of up to 12 hours a day during the winter.

Countries of the former Yugoslavia

1. Bosnia and Herzegovina

Bosnia and Herzegovina suffered greatly during the war in the first half of the 1990s, and as of July 2001, its energy production, consumption, and infrastructure have still not returned to pre-war levels. Per capita energy consumption is the second-lowest in Europe. Bosnia and Herzegovina produced 0.03 quadrillion Btu (quads) of energy and consumed 0.09 quads in 1999, thereby importing more than half its energy needs.

Bosnia and Herzegovina has no crude oil or natural gas production. In 1999, it imported about 22,000 bbl/d of oil, all refined products as Bosnia has no refineries of its own. Natural gas is imported from Russia (Gazprom) through Hungary and Serbia (Yugoslavia). The natural gas company servicing the RS is the RS-owned Gaspromet Pale and the company servicing the FBiH is the FBiH-owned Bosnia Herzegovina (BH) Gas. There have been financial disagreements between the two companies that have resulted in Gaspromet Pale on occasion reducing the flow of gas into the FBiH that comes through the RS. There is a gas pipeline from Serbia to the border town of Zvornik that bifurcates, with one branch going to Sarajevo and onward to Zenica in the FBiH, and another branch going to Birac and Bijeljina in the RS. Another pipeline is planned, also from Zvornik, to service areas of the RS that currently rely on gas cylinders. It has not been decided whether Gazprom or ITERA will supply the gas. The RS announced a tender for

construction of the 283-mile pipeline in June 2001. Its planned capacity is over 35.3 Bcf per year.

Bosnia and Herzegovina's electricity network was heavily damaged by war during the 1990s. It is estimated that by 1996, at the end of the war, more than half of Bosnia and Herzegovina's generating capacity was not in operation and about 60% of the transmission and distribution network was seriously damaged. In addition, Elektroprivreda Bosnia and Herzegovina, which had been Bosnia and Herzegovina's monopoly producer, transmitter, distributor and supplier, was disbanded after the Dayton Peace Accords. Three vertically integrated systems were created: two for the FBiH (Elektroprivreda of Bosnia and Herzegovina (EPBiH) and Elektroprivreda Hrvatske Zajenice Herceg-Bosne (EPHZHB), and one for the RS (Elektroprivreda of Republika Srpska (EPRS). These three utilities trade extensively. Currently, about 80% of pre-war capacity has been restored, which is sufficient at present as electricity consumption remains below 50% of pre-war levels. Bosnia and Herzegovina is now able to be a net exporter of electricity (about 20% of generated electricity in 2000), after being a net importer of electricity in 1999. International donors have contributed about $513 million since 1996 toward improving Bosnia and Herzegovina's electricity infrastructure. The World Bank is currently negotiating Bosnia and Herzegovina's third power reconstruction project (Power III), which not only aims to reconstruct several thermal and hydro power plants, but also to rehabilitate the 400-kV transmission grid.

2. Croatia

Although Croatia's economy was damaged by warfare in the early 1990s, and still has not reached pre-1991 levels of energy consumption or production, the country made a substantial economic recovery in the latter part of the 1990s. Croatia's total energy consumption increased 24% from 1993 through 1999 but its total energy production fell by about 10% in the same period. Oil, gas, and power appear to have increased in 2000 and into 2001, but not enough to overcome the trend of increasing energy consumption in Croatia's growing economy. Croatia's electricity and petroleum/natural gas monopolies are slated for break-up and subsequent privatization in 2001-2002. In July 2001, Croatia's parliament passed a set of laws liberalizing the energy sector in preparation for privatization, and also in compliance with European Union regulations.

Croatia's oil reserves have been estimated at 92 million barrels. Although the country has reserves in the north along the border with Hungary and also along the Adriatic coast, the majority of Croatia's oil fields are in the eastern region of Slavonia. When the region came under rebel Serb control in 1991, Croatia was deprived of a valuable economic resource, and despite the return of eastern Slavonia to Croatian control in 1998, production in this area has yet to recover to pre-war levels. Overall, Croatia's oil production is still lower than pre-1991 levels, with output estimated at 33,000 barrels per day (bbl/d) in 2000. Croatia's oil consumption in 2000 was estimated at 85,000 bbl/d. However, oil production rose slightly in the first four months of 2001. Industrija Nafte (INA) Oil and Gas is Croatia's state-owned oil and gas company, with authority over drilling, refining, and processing crude oil throughout the country. Prior to 1991, INA had supplied all of the former Yugoslavia. As Yugoslavia split into six separate countries and amidst tense fighting however, INA saw its production drop by more than 50%, had one of its storage sites severely damaged, and lost significant market share. Although INA is still suffering losses, according to INA President Tomislav Dragicevic, by mid-June 2000, INA had recovered 70% of its pre-1991 market in Croatia, 60% of its market in Bosnia and Herzegovina, and 30% of its market in Slovenia--the company is re-establishing links in the former Yugoslavia. INA has small producing fields in Russia, Egypt, and Angola. Most of Croatia's oil is imported via the Adria pipeline, which has a 400,000-bbl/d capacity and connects Slovenia, Hungary, Slovakia, Serbia, and Croatia. It runs from Croatia's Adriatic port of Omisalj eastwards to Sisak, where it splits into a northern route to Hungary, as well as an eastern route to Serbia. INA has three refineries in operation, two in Zagreb and one in Rijeka, with a total capacity of 253,000 bbl/d.

Croatia has estimated natural gas reserves of 1.2 trillion cubic feet (Tcf), with considerable reserves located in the Adriatic Sea. In 1999, Croatia's 17 gas fields produced a total of 54.7 billion cubic feet (Bcf) of gas. With natural gas demand at 93.9 Bcf in 1999, Croatia is forced to import natural gas to meet domestic demand. The Croatian city of Karlovac is laying 559 miles of a local pipeline network at a cost of $46 million. The network will connect to a planned trunkline from the existing gas-pipeline network that goes to Slovenia, Zagreb, and Croatia's small on-shore gas fields

in the north of the country. Croatia is expected to face gas shortages if new sources do not come on line soon because of its declining annual gas production from depleted on-shore fields. Imports of 40-42 Bcf of gas annually from Russia are not likely to be sufficient to cover future demand. With natural gas consumption predicted to increase as the country's economy recovers and gas-fired plants come on-line, Croatia has begun exploring for natural gas with foreign partners. In 1996, INA and Agip (Italy) signed a $320-million production sharing agreement to explore for and exploit the natural gas reserves in the northern Adriatic in the Ivana area. INA will contribute $154 million to exploit four gas fields, which have total proven gas reserves of about 282 Bcf. Construction of the INA/Agip gas platform Ivana in the Adriatic is nearly complete, and drilling should commence soon. Production is expected to be 67 Mmcf/d. The field is estimated to contain 279 Bcf, though gas can only be piped to Italy, then back to Croatia through Slovenia.

Croatia has a very small coal industry. The country has 43 million short tons (Mmst) of coal reserves, 36 Mmst of which is lignite or subbituminous. In 1999, Croatia's coal consumption, which at 0.42 Mmst was less than half of its 1993 total of 0.85 Mmst, still far outpaced the country's minimal 0.02 Mmst of coal production.

Croatia has an electricity-generating capacity of approximately 3.6 gigawatts (GW). Although Croatia's electricity generation has increased from 8.6 billion kilowatt-hours (Bkwh) in 1992 to nearly 11.0 Bkwh in 1999, the country's electricity consumption, which has risen from 10.9 Bkwh in 1992 to 13.6 Bkwh in 1999, continues to exceed domestic generation, forcing Croatia to rely on electricity imports to meet domestic demand. Hydroelectric power is Croatia's largest source of domestic energy, accounting for approximately 35% of domestic energy production and around 20% of total energy consumption. The country's hydroelectric plants are located along the Adriatic coastline at Obrovac, Senj, and Zakucac, as well as along Croatia's border with Slovenia and Hungary at Varazdin. Croatia also has three oil-fired plants in Zagreb, Sisak, and Urinj, and several smaller gas and coal-fired plants that account for about 40% of the country's total electricity generation. The Krsko nuclear plant in Slovenia will begin to supply Croatia with electricity by July 2002, and Croatia will become joint owner of the plant in January 2002. Croatia built the plant jointly with Slovenia, although it is located in Slovene territory. Enron is developing, constructing and will own a $175 million, 240-MW natural gas combined cycle power plant at Jertovec, north of Zagreb, to be completed at the end of 2002.

Croatia's power sector is dominated by the state-owned Hrvatska Elektroprivreda (HEP). HEP supplies about 95% of the total electricity requirements of the country, with the remaining 5% is produced in industrial co-generation plants mainly for consumers' own needs and in small private hydro power plants. The Transmission Division of HEP controls the power transmission grid in Croatia. Electricity distribution is operated exclusively by HEP's Distribution Division through 21 distribution regions that largely correspond to the country's counties.

3. The Former Yugoslav Republic of Macedonia

Macedonia is a small energy producer and consumer. Macedonia produced 0.076 quads in 1999 and consumed 0.129 quads in 1999. Per capita energy consumption was 64.7 million Btu in 1999. According to the Macedonian Ministry of the Economy's estimates, total energy use will be 23% higher in 2001 than it was in 2000.

Macedonia has neither domestic crude oil production nor any crude oil reserves, and imported 24,000 bbl/d in 1999. Crude oil refining capacity was 51,180 bbl/d as of January 1, 2001, with Macedonia's sole refinery the OKTA facility near Skopje. Most oil supplies are imported via the Greek port of Thessaloniki and then by tanker truck. Hellenic Petroleum (HP) has acquired a majority share of OKTA. The Macedonian Ministry of the Economy expects oil usage to increase by 18% in 2001 over 2000, much of this increase for the mazut-fired (heavy viscous oil) Negotino thermoelectric plant which was put back in use due to declining coal reserves and reduced hydro capacity. This plant is a heavy polluter. ESM is planning to convert it to gas eventually, and construct a gas pipeline from Skopje to the plant.

Macedonia's natural gas consumption was 1.4 Bcf in 1999, all of which was imported. A natural gas pipeline from Skopje feeds into Bulgaria's natural gas network. Macedonia's state-owned gas company is GAMA, but Makpetrol owns a significant share. Efforts are under way to expand the pipeline network and increase natural gas consumption by constructing gas-fired plants and converting other thermoelectric plants to gas.

Macedonia produced 8 million short tons of coal in 1999, most of it brown lignite. Most of the coal is consumed domestically, and coal is used to generate about 60% of Macedonia's electricity. Macedonia's net exports of coal are negligible, while some anthracite and coke must be imported for the proper mix in power plants and for industry. Reserves have been estimated at more than 1 billion tons, but declining.

Macedonia's electrical generating capacity was 1,440 MW in 1999, with about 70% thermal and 30% hydro. Electricity generation was 6.4 billion Kilowatt hours in 1999. According to Macedonia's sole power utility, Elektrostopanstvo Na Makedonija (ESM), electricity consumption rose by 2.8% for households and 10% for commercial customers in 2000. ESM expects demand to rise by 20% in 2001. ESM is planning major investments (upwards of $1.4 billion) over the next 14 years in Macedonia's power sector, in order to increase generating capacity by about 809 MW and make use of natural gas imports. ESM will also invest some of this amount in the improvement and expansion of the electricity grid. Among the most important projects is a gas-fired combined heat and power (CHP) plant near Skopje to be constructed by ESM and Toplifikacija with an installed capacity of 200 MW. Completion is expected in 2005. Several hydro plants will be built and several others will be renovated. Macedonia also imports a small amount of electricity from Bulgaria to make up for insufficient capacity, mostly in months when hydro capacity is low. Since the conflict with rebel ethnic-Albanians began, the debts of ESM have increased dramatically, to $130.7 million.

4. Slovenia

Slovenia is a small energy producer and consumer. It produced 0.135 quads and consumed 0.274 quads in 1999. Per capita energy consumption of 137.8 million Btu in 1999 was slightly higher than that of Spain (132.6), and much higher than the other former Yugoslav republics.

Slovenia has insignificant crude oil and natural gas production; over 99% of total petroleum and natural gas consumption is imported. Oil reserves have been estimated as high as 50 million barrels. In April 2001, Nafte Lendava and Nemmoco Slovenia signed a $25 million agreement to pump oil in the northeastern part of the country. The Nafte Lendava refinery (jointly owned by the government and Petrol) processes 13,500 bbl/d of crude oil. Petrol, the Slovene Petroleum Company, accounts for 75% of the downstream oil market. Slovenia has signed a letter of intent with Energetika Lubljana and Toplotna Oskrba Maribor for setting up a 90-day reserve of oil and oil products as required by the EU for accession. Most of Slovenia's natural gas is imported from Russia or Algeria (by way of Italy). Slovenia has 552 miles of gas pipelines that supply up to 45 Bcf per year of gas. Slovenia is connected to Austria, Italy, and Croatia. Geoplin, the state-owned gas company, is involved in trade and transit of natural gas and is supported by 12 distribution companies.

Slovenia has some coal reserves (65 million tons), which has enabled it to be almost entirely self-sufficient in coal, an energy source that accounted for about 19% of total energy consumption in 1999.

Slovenia's electricity generating capacity and production are quite small, though on a per capita basis close to the European average. Slovenia's generating capacity is diverse in origin, with thermal, hydro, and nuclear plants all having a substantial share. Slovenia was able to export (net) 1.56 billion kilowatthours in 1999, about 12% of total generation. The growing economy in the past few years has meant increasing electricity demand in Slovenia, which is estimated at having grown between 4% and 6% for 2000. Despite reduced hydro output because of unfavorable weather, total power output increased, but not as much as demand, so electricity imports rose and exports fell, though net trade was still positive. Slovenia operates a single reactor of Western design at Krsko, soon to be on a 50/50 basis with Croatia. The

reactor is a U.S. built pressurized water reactor and is operated to Western standards. The only possible problem with the reactor could arise over the capability of the plant to withstand seismic shocks. There is a Slovenian Nuclear Safety Administration (SNSA) responsible for ensuring the safety of the Krsko plant and the disposal of its waste. On April 29, 1999 an arrangement between the SNSA and the United States Nuclear Regulatory Commission for the Exchange of Technical Information and Co-operation in Nuclear Safety Matters was signed in Ljubljana.

ELES (Elektro-Slovenija) was the state-owned trading and transmission monopoly, but the first stage of deregulation of the internal electricity market went into effect in April 2001. Large users now can choose among other distribution companies competing with ELES, though prices are controlled during a six-month transition period. In January 2003, the deregulation will extend to households. Prices are expected to fall for large industrial customers, but rise for household customers, bringing Slovenia in line with European prices. The Slovene Energy Agency has received over 20 applications from companies vying to be independent distributors. The Slovene Energy Agency will also set tariffs charged for using the grid, thereby retaining some government control of consumer prices. In June 2001, Slovenia's three state-owned hydropower producers merged into one holding company, Slovenske Hidroelekrarne, which is intended to make them better able to compete in a deregulated internal market and internationally. The new company has been granted a government concession to develop a chain of five new hydro plants on the Lower Sava River with a total installed capacity of 207 MW.

5. Federal Republic of Yugoslavia (Serbia and Montenegro)

Yugoslavia's energy infrastructure has not fully recovered from the breakup of the former Yugoslavia and the subsequent wars in the Balkans during the first half of the 1990s, let alone the Kosovo war of 1999. Montenegro suffered comparatively little compared to Serbia and its two autonomous provinces. At end-2000, former Yugoslav Minister of Energy and Mining Saboljud Antic estimated energy infrastructure needs at $7 billion.

Serbia produces 18,000 bbl/d of crude oil in the autonomous province of Vojvodina in the north, enough to supply about one-third of domestic oil consumption. The first discovery was in 1949, and to date 45 small oil fields and 43 natural gas fields have been discovered. The Serbian region near Pozarevac is also believed to contain hydrocarbons, and there is an oil shale deposit at Aleksinac north of the Serbian town of Nis. In addition, Ramco (U.K.) is conducting upstream work in Montenegro through a joint venture with Montenegrin state oil company Jugopetrol Kotor. Ramco operates the Ulcinj Block, which covers the southern part of Montenegro's continental shelf together with an adjacent strip along the coast. In July 2001, Yugoslavian officials discussed oil barter deals with Iraq, and the first deal worth about $45 million may already be set.

Nafta Industrija Srbije (NIS) Jugopetrol is the state-run oil and gas company. Privatization efforts have begun, according to the Serbian government, along with efforts to settle the company's debts with Russia's Gazprom. NIS assumed total control over oil imports on March 6, 2001. Previously, up to two-thirds of oil trade was undertaken on the black market, leading to tax and revenue losses for the government. However, the government's decision to monopolize oil imports was challenged in May 2001, when private traders created the Nafta shareholding society. Nafta plans to import light crude oil from sources such as Syria and Russia and have it processed into high octane gasoline. Serbia has two refineries -- at Novi Sad and Pancevo, and several smaller oil facilities for making lubricants and other oils. The refineries are thought to be operating at a capacity of about 60,000 bbl/d, after being damaged in the Kosovo conflict and partially repaired. If and when they are fully repaired, capacity will be about 158,000 bbl/d, and include more refined products. These refineries receive much of their crude oil supplies via the eastern spur of the Adria pipeline, which runs from the Adriatic Sea port of Omisalj (Croatia) to Sisak (Croatia), before splitting into an northern spur to Hungary and an eastern spur to Serbia. Shipments resumed in November, 2000, although imports have been limited by the ability of Yugoslavia to pay for imported oil.

Although a small amount of natural gas is produced domestically in the autonomous province of Vojvodina in the north,

imports (all from Russia) accounted for more than 60% of Serbian gas consumption in 2000. Natural gas is used by industry to make fertilizer and synthetic rubber, by power plants, and for district heating, particularly in Vojvodina, where most of the natural gas reserves and the bulk of the natural gas distribution network are located. Russian natural gas exports stopped in June 2000 after Serbia fell behind in payments. Russian exports resumed in November 2000 after credit was arranged by the Russian government, but were reduced in December after Serbia again failed to pay for all of the gas that they received. Negotiations have since begun over payment of Serbia's outstanding debt to Russia's Gazprom.

Yugoslavia is the only country in the Balkan region with large coal deposits. Proven coal reserves of 18.2 billion short tons are found in five basins: Kostolac, Kolubara, Kosovo, Metohija and Pljevlja. Over 95% of this coal is lignite accessible by surface mining, but only about 10% has been mined. Serbia estimates that as much as one-third of the coal resources in Yugoslavia are in Kosovo. Kosovo's lignite is particularly valuable because of its low sulfur content. Annual coal production at the two main mines in Kosovo accounted for a quarter of Yugoslavia's total coal output in recent years. Total coal production in Yugoslavia increased by over 8% in 2000.

Most of Serbia and Montegnegro's electricity production, transmission, and distribution is carried out by two state-run companies: Elektroprivreda of Serbia (EPS) and Elektroprivreda of Montenegro (EPCG), which has been slated for privatization in 2001. Electricity is Yugoslavia's primary source of energy, and prior to the crisis in Kosovo electricity accounted for about 75% of domestic energy needs. The primary fuel for power generation is coal, with Yugoslavia containing sufficient reserves potentially to become a significant exporter of electric power. Hydroelectricity represents Yugoslavia's other major source of electric power. Hydropower plants are located on the Danube, Drina, and Morava rivers in Serbia, and the Moraca, Piva and Zeta rivers in Montenegro. The electrical grid was hurt by the overall lack of investment by the Milosevic regime and because of the war, past sanctions, and the lack of payment by electricity customers. Serbia was an electricity exporter prior to the breakup of the former Yugoslavia, but during the 1990s poor maintenance and state-imposed below-market prices have made Serbia into an importer, with daily imports of about 25-30 million kWh in early 2001. Because of the electricity's low cost, it is used extensively for home heating. Prior to the Kosovo crisis, Serbia (i.e. excluding Montenegro) had a generating capacity of 9,560 MW, but at end-2000 operable capacity was estimated at 5,300 megawatts. Serbian officials have indicated that as little as one third of required maintenance was performed on the Serbian grid in 2000. The failure to invest in and maintain infrastructure has led to frequent power cuts in recent months, with cuts often lasting for four or five hours per day, though these cuts are also due to the same drought and dependence on hydropower that have led to severe power problems in Albania. Serbian officials plan to raise electricity prices and complete the half-constructed 2 x 350 MW Kolubara B power complex (coal-fired) and rehabilitate other power plants if international funds are provided.

Table 1. Economic and Demographic Indicators for Selected Balkan Countries

	Gross Domestic Product (GDP)				
	1999E (Billions of US$ -- PPP*)	Real GDP Growth Rate		Per Capita GDP, 1999E (US$ -- PPP)	Population, 2000E (Millions)
		1999 Estimate	1999-03 Projection		
Bosnia and Herzegovina	$6.2	5%	11%	$1,770	3.8
Croatia	$23.9	0%	N.A.	$5,100	4.3
F.Y.R.O.M.	$7.6	2.5%	5.3%	$3,800	2
Slovenia	$21.4	3.5%	N.A.	$10,900	1.9
Yugoslavia	$20.6	-20%	N.A.	$1,800	10.7
Subtotal/weighted average	$79.7	-3.59%	N.A.	$3,357	22.7

Albania	$5.6	8%	7.7%	$1,650	3.5
Total/weighted average	**$85.3**	**-2.845%**	**N.A.**	**$3,133**	**26.2**

Sources: CIA World Factbook; Energy Information Administration estimates; World Bank. N.A. = not available *PPP = Purchasing Power Parity exchange rates.

Table 2. Energy Consumption and Carbon Dioxide Emissions in Selected Balkan Countries, 1999

	Energy Consumption									Carbon Dioxide Emissions* (Million metric tons of carbon)
	Total (Quadrillion Btu)	Petroleum	Natural Gas	Coal	Nuclear	Hydro-electric	Other Electricity	Net Electricity Imports	Per Capita (Million Btu)	
Bosnia and Herzegovina	0.09	52%	8%	18%	0%	19%	0%	3%	23.1	1.2
Croatia	0.41	48%	24%	2%	0%	16%	0.03%	9%	87.5	5.49
F.Y.R.O.M.	0.13	39%	1%	50%	0%	9%	0.4%	0%	64.7	2.71
Slovenia	0.27	44%	13%	19%	16%	14%	0%	-6%	137.8	4.16
Yugoslavia	0.61	22%	11%	48%	0%	18%	0%	2%	57.5	10.94
Subtotal/weighted average	1.52	36.5%	13.6%	28.8%	3.0%	15.9%	0.01%	2.2%	65.40	24.5
Albania	0.08	26%	1%	1%	0%	67%	0%	6%	20.3	0.42
Total/weighted average	1.59	36.0%	13.0%	13.0%	2.8%	18.5%	0.01%	2.4%	58.88	24.91

***Includes carbon dioxide emissions from the consumption of petroleum, natural gas, and coal, and from the flaring of natural gas. Tons of carbon can be converted to tons of carbon dioxide gas by multiplying by 3.667.**
Source: Energy Information Administration, International Energy Database, July, 2001.

Table 3. Energy Supply Indicators-- Selected Balkan Countries

	Fossil Fuel Proved Reserves			Fossil Fuel Production, 2000			Electric Generating Capacity, 1/1/99 (Million kilowatts)	Crude Oil Refining Capacity, 1/1/01 (Thousand barrels per day)
	Crude Oil, 1/1/01 (Thousand barrels)	Dry Natural Gas, 1/1/01 (Billion cubic feet)	Coal, 12/31/96 (Million short tons)	Petroleum[1] (Thousand barrels per day)	Dry Natural Gas (Trillion cubic feet)	Coal[2] (Million short tons)		
Bosnia and Herzegovina	0	0	N.A.	0	0	1.98	3.58	0
Croatia	92,196	1,237	43	24.45	0.0612	0.017	3.6	252.6
F.Y.R.O.M.	0	0	N.A.	0	0	8.03	1.44	51.18
Slovenia	0	N.A.	65	0.002	0.0018	5.29	2.65	13.5
Yugoslavia	77,500	1,700	18,157	16.17	0.0257	36.1	11.78	158.25
Subtotal	169,696	2,937	18,265	40.622	0.0887	51.407	23.06	475.53
Albania	165,000	100	N.A.	6.23	0.0053	0.05	1.684	26.3
Total	334,696	3,037	18,265	46.852	0.094	51.467	24.74	501.83

[1] ***Crude oil only.*** [2] ***1999 figures.***

Sources: Crude Oil and Natural Gas Reserves: PennWell Publishing Co., *Oil & Gas Journal*, 12/28/00. Crude Oil Refining Capacity: PennWell Publishing Co., *Oil & Gas Journal*, 12/28/00. Crude oil and and natural gas production figures: PlanEcon, April 2001. All Other Data: Energy Information Administration, International Energy Database, July 2001.

Table 4. Electricity Generation, Imports, and Exports, Billion Kilowatthours, 1999, Selected Balkan Countries

	Electricity Generation	Exports	Imports	Net Exports (- means Net Imports)
Bosnia and Herzegovina	2.59	0.15	0.43	-0.28
Croatia	10.96	1	4.45	-3.45
F.Y.R.O.M.	6.40	0.03	0.08	-0.05
Slovenia	12.45	2.2	0.65	1.56
Yugoslavia	34.46	0.96	1.92	-0.96
Subtotal	66.85	4.34	7.52	-3.18
Albania	5.33	0.1	0.52	-0.42
Total	72.18	4.44	8.04	-3.60

Source: Energy Information Administration, International Energy Database

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Sources for this report include: CIA World Factbook 2000; Central Europe Review; Central Europe Online; U.S. Department of Commerce's Central and Eastern European Business Information Center; Economist Intelligence Unit ViewsWire; U.S. Energy Information Administration; Electricity Daily; Financial Times; Oil and Gas Journal; Petroleum Economist; Radio Free Europe/Radio Liberty; Reuters; WEFA Eurasia Economic Outlook; World Markets Online.

For more information from EIA on the Balkans, please see:

EIA - Country Information on Bosnia and Herzegovina
EIA - Country Information on Croatia
EIA - Country Information on Former Yugoslav Republic of Macedonia
EIA - Country Information on Slovenia
EIA - Country Information on Yugoslavia
EIA - Country Information on Albania

Links to other U.S. government sites:

2000 CIA World Factbook
U.S. International Trade Administration, Energy Division
Radio Free Europe/Radio Liberty - Balkans Report
U.S. Department of Commerce Trade Compliance Center: Market Access Information
Central and Eastern Europe Business Information Center (CEEBIC) of the U.S. Department of Commerce
U.S. Library of Congress Country Study: former Yugoslavia

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